

1 CLAIMS:

2 What is claimed is:

3 1. A method comprising:

4 providing at least one authentic hard-copy document,  
5 each of said authentic hard-copy document including at least  
6 one mark having at least one color that is out of gamut of a  
7 printing device having at least three ink colors;

8 color scanning a plurality of candidate documents to  
9 form scanned documents each having a two-dimensional array  
10 of image pixels for each candidate document;

11 searching each array for said at least one color; and

12 sorting said plurality of candidate documents into a  
13 first group of scanned documents not having said at least  
14 one color, and into a second group of scanned documents  
15 having said at least one color, so that said scanned  
16 documents in said first group being probably counterfeit,  
17 and said scanned documents in said second group being  
18 possibly authentic.

19 2. A method as recited claim 1, wherein each of said pixels  
20 has at least three color pixel values.

21 3. A method as recited claim 1, wherein the step of color  
22 scanning includes employing a colorimeter.

23 4. A method as recited claim 1, wherein the step of  
24 providing includes printing using a custom-color ink.

1     5. A method as recited claim 1, wherein the step of  
2     providing authentic hard-copy documents includes providing a  
3     plurality of bank checks.

4     6. A method as recited claim 1, further comprising:

5     noting correct pixel locations of said at least one color in  
6     said authentic document;

7     determining particular pixel locations of said at least one  
8     color in each of said second group of scanned documents; and

9     forming a third group of scanned documents not having said  
10    particular pixel locations corresponding to said correct  
11    pixel locations, and into a fourth group of scanned  
12    documents having said particular pixel locations  
13    corresponding to said correct pixel locations, so that said  
14    scanned documents in said third group being probably  
15    counterfeit, and said scanned documents in said fourth group  
16    being possibly authentic.

17    7. A method as recited claim 1, further comprising  
18    employing an authentication test taken from a group of  
19    authentication tests consisting of:

20    gamut color size correspondence;

21    gamut color location correspondence;

22    magnetic number correspondence;

23    checking account pattern-of-use exception;

1 unexpected presence of ultraviolet fluorescing;  
2 unexpected presence of thermochromic responding;  
3 unexpected presence of laser resonating inks;  
4 unexpected absence of ultraviolet fluorescing;  
5 unexpected absence of thermochromic responding;  
6 unexpected absence of laser resonating inks; and  
7 any combination of these authentication tests.

8 8. An apparatus comprising:

9 means for providing at least one authentic hard-copy  
10 document, each said authentic hard-copy document including  
11 at least one mark having at least one color that is out of  
12 gamut of a printing device having at least three ink colors;

13 means for color scanning a plurality of candidate  
14 documents in forming a two-dimensional array of image pixels  
15 for each candidate document;

16 means for searching each array for said at least one  
17 color; and

1 means for sorting said plurality of candidate documents  
2 into a first group of scanned documents not having said at  
3 least one color, and into a second group of scanned  
4 documents having said at least one color, so that said  
5 scanned documents in said first group being probably  
6 counterfeit, said scanned documents in said second group  
7 being possibly authentic.

8 9. An apparatus as recited claim 8, wherein the means for  
9 providing authentic hard-copy documents includes means for  
10 providing a plurality of bank checks.

11 10. An apparatus as recited claim 8, further comprising:

12 means for noting correct pixel locations of said at  
13 least one color in said authentic document;

14 means for determining particular pixel locations of  
15 said color in each of said second group of scanned  
16 documents; and

17 means for forming a third group of scanned documents  
18 not having said particular pixel locations corresponding to  
19 said correct pixel locations, and into a fourth group of  
20 scanned documents having said particular pixel locations  
21 corresponding to said correct pixel locations, so that said  
22 scanned documents in said third group being probably  
23 counterfeit, said scanned documents in said fourth group  
24 being possibly authentic.

1 11. A method comprising imparting a plurality of marks onto  
2 a hard copy using at least one custom colored ink, and  
3 subsequent evaluation of a scanned and digitized image of  
4 said hard copy for the purpose of counterfeit detection,  
5 including the steps of:

6 providing a hard copy;

7 imparting onto said hard copy at least one visible mark  
8 using at least one chosen colored ink, each said marks  
9 covering an area of coverage on said hard copy and each  
10 area of coverage having defined position within said  
11 hard copy;

12 scanning said hard copy to form a digitized image  
13 having at least three image planes, each said image  
14 plane being represented by an array having pixel  
15 brightness data for a plurality of pixels, each of said  
16 pixels having at least three color component and having  
17 a pixel position;

18 examining the pixels of said digitized image  
19 corresponding to the at least one said area of  
20 coverage; and

21 determining the presence or absence of the expected  
22 color in said at least one area of coverage based on  
23 the values of the color components of pixels  
24 corresponding to and lying within said area of  
25 coverage.

26 12. A method as recited in claim 11, wherein said scanned  
27 and digitized image is transaction document.

1 13. An article of manufacture comprising a computer usable  
2 medium having computer readable program code means embodied  
3 therein for causing authentication testing, the computer  
4 readable program code means in said article of manufacture  
5 comprising computer readable program code means for causing  
6 a computer to effect the steps of claim 1.

7 14. A program storage device readable by machine, tangibly  
8 embodying a program of instructions executable by the  
9 machine to perform method steps for authentication testing,  
10 said method steps comprising the steps of claim 1.

11 15. An article of manufacture comprising a computer usable  
12 medium having computer readable program code means embodied  
13 therein for causing authentication testing, the computer  
14 readable program code means in said article of manufacture  
15 comprising computer readable program code means for causing  
16 a computer to effect the steps of claim 11.

17 16. A program storage device readable by machine, tangibly  
18 embodying a program of instructions executable by the  
19 machine to perform method steps for authentication testing,  
20 said method steps comprising the steps of claim 11.

21 17. A computer program product comprising a computer usable  
22 medium having computer readable program code means embodied  
23 therein for causing authentication testing, the computer  
24 readable program code means in said computer program product  
25 comprising computer readable program code means for causing  
26 a computer to effect the functions of claim 10.

27 18. An apparatus for authentication testing including means

1 to effect the functions of claim 11.